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XXV.

CONTRIBUTIONS TO THE BOTANY OF NORTH AMERICA.

BY ASA GRAY.

Presented Jan. 9, 1878.

1. *Elatines Americanae*.

§ 1. CRYPTA, Seubert. Isostemonas (di-triandræ), oppositifoliæ: capsulæ dissepimenta tenuia nunc evanida. Flores in Americanis semper sessiles, trimeri nunc disepali: semina leviter curvata.

1. E. TRIANDRA, Schkuhr. Folia oblanceolata vel oblongo-lanceolata, basi sensim attenuata: petala stamina et carpella sæpissime 3 cum sepalis 2: semina fere subsequentis vel tenuiora, minus insculpta.

2. E. AMERICANA, Arn. Folia obovata obtusissima: flores sæpius dimeri, nunc trimeri: semina cylindracea, curvula, lin. circiter $\frac{1}{3}$ longa, testa in lineis 9-10 multi-(20-30-) clathrata.

3. E. BRACHYSPERMA, n. sp. Folia oblonga seu ovalia basi attenuata, nunc sublanceolata: flores plerumque dimeri: semina breviblonga rectiuscula, haud ultra lin. $\frac{1}{4}$ longa, testa in lineis 6-7 grossius 10-12-clathrata.

§ 2. ELATINELLA, Seubert. Diplostemonas (tetrameræ octandræ, rarissime trimeræ hexandræ), oppositifoliæ.

4. E. CALIFORNICA, n. sp. Folia obovata basi longius attenuata, inferiores in petiolum lamina haud longiorem: flores breviter pedunculati: semina circinato-incurvata *E. Hydropiperis*.

My attention was recently called to our species of this genus by a letter from Mr. James Lloyd, communicating specimens of an *Elatine* which he found growing abundantly in the vicinity of Nantes, France, which he wished to have critically compared with our *E. Americana*, but which has, as he remarked, much narrower leaves and trimerous flowers, except that the sepals are almost always dimerous. If new,

Mr. Lloyd proposed to name this plant *E. inaperta*; because that, while the flowers of all the European species are open or expanding, in this and in *E. Americana*, as far as he had seen, they are always closed. I cannot well distinguish the specimens sent from Swedish ones of *E. triandra*, which equally appear not to have expanded their blossoms; and from a remark of Seubert's (Elat. Monogr. 54), and from his reference to one by Braun, it may be inferred that this occurs, more or less, in the submersed state of *E. hexandra*, DC., his *E. paludosa*. In our American species, we have both closed and open blossoms, at least in *E. Americana*; and the petals in some terrestrial states of the latter are so large, conspicuous, and enduring, and so strikingly tinged with pink or rose-color, that they would seem to belong to a totally distinct species. The more aquatic forms, even when flowering above the water, probably expand transiently if at all, and have the appearance of being close-fertilized in the bud. But observations as to this should be made upon living plants.

The French specimens sent by Mr. Lloyd at once recalled the narrow-leaved plants of the Western Atlantic States, which had been unwittingly referred to *E. Americana*, regarded as the only N. American species; and on comparison they seem to be identical. I find, moreover, that Seubert has identified Chilean specimens, collected by Bertero, with *E. triandra*. [In a pamphlet on the Flora of the West of France, dated Dec. 30, 1877, Mr. Lloyd has published a detailed description and account of his species, under the name of *Elatine inaperta*.]

Among the herbarium specimens inadvertently referred to *E. Americana*, I find several, of more or less terrestrial habit, with leaves intermediate in form between those of *E. Americana* and of *E. triandra*, and with seeds distinct from either. I distinguish this as a species under the name of *E. brachysperma*.

Finally, among the many interesting plants received from the sharp-sighted and enthusiastic Mr. Lemmon, I find an *Elatine* of the *Elatinella* section, which was not before known in America.

So that, instead of a single species, we can now recognize four, the characters of which are presented in the above synopsis.

1. *E. TRIANDRA*, Schkuhr. This European species, as stated above, is said by Seubert to be Chilean, and in Bertero's collection. Naudin has accordingly introduced it into Gay's Flora Chilena, and also founded *E. Chilensis* on Bertero's specimens, describing the leaves as oblong-obovate. I have no Chilean specimens. All the American

specimens which I refer to this species were collected by E. Hall: one in ponds at Athens, Illinois, the others on the Platte River, either in Nebraska or Colorado; but I have seen others from the Mississippi Valley. They answer to Seubert's "forma intermedia" in the shape of the leaves (except that they are not "remote crenulata") and in the alternate flowers. Apparently the petals have not expanded. Search should be made in drier ground for the terrestrial form; which, in Europe, has more numerous and opposite flowers with expanded reddish petals, "petala rubella."

We have no specimens of the New Zealand and Australian species, *E. gratioloides*, A. Cunn., which should belong to the above rather than to the following species.

2. *E. AMERICANA*, Arn. This is the proper specific name for our common species, not only because it is the *Peplis Americana* of Pursh, but because Arnot's *Elatine Americana* was published in the year 1830, Fischer and Meyer's *E. minima* in 1836. This is the only species we have on the Atlantic border, from New Hampshire to Virginia; and we have it also from Colorado and from Oregon. It is not rarely trimerous, especially the terrestrial form. Like *E. triandra* in Europe, this also, when well developed in drier soil, has larger and broader petals than in the figure by Sprague in Gray, Gen. Ill. i. t. 95, open in anthesis and remaining so, and tinged with rose-color or purple. A diminutive form of this state is *E. Clintoniana*, Peck in 22d Report of Regents of the University of the State of N. Y., 1870, p. 53; and this is the first indication in this country of the state in question. Now that Mr. Peck has well-formed seeds of both forms, he is convinced that his *E. Clintoniana* is merely a form of *E. Americana*. The only other specimens we have of the open-flowered and commonly reddish-petalled *E. Americana* are large ones collected near New Haven, Connecticut, in October, 1873, by Dr. F. W. Hall, and communicated by Professor Eaton; and a depressed state, from Multnomah Co., Oregon, no. 134 of a collection made by T. W. Howell, and recently distributed by Mr. Woolson. In good fruits, the seeds are rather more numerous than in the figure above referred to, rather longer in proportion, and commonly more decidedly curved: in insertion they are not so basal, yet all are ascending.

3. *E. BRACHYSPERMA*. Our specimens are mostly terrestrial; and are from Illinois, E. Hall, Texas, E. Hall, 1872, no. 37 of his Texan distributed collection, and California, no. 257 of Kellogg and Harford's distributed collection; the latter with expanded flowers. A submersed or floating form, with narrower leaves, was collected by

M. S. Bebb in Illinois. The foliage is intermediate between the two foregoing species; the seeds are quite peculiar.

4. *E. CALIFORNICA*. This American representative of *E. Hydro-piper* has been collected only by Mr. J. G. Lemmon, in Sierra Valley, on the Sierra Nevada, alt. 5000 feet, and was received in 1877. The seeds are just those of the European species referred to; the leaves broader and shorter-petioled; the pedicels all shorter than the calyx; the upper or younger flowers nearly sessile. These are evidently expanded in anthesis, are white, and not longer than the sepals.

2. *Two New Genera of Acanthaceæ.*

CARLOWRIGHTIA, nov. gen. Tr. *Justiciearum*.

Calyx alte divisus; segmentis angustis æqualibus. Corolla limbo 4-partito rotato, tubo tenui 2-3-plo longiore, fauce haud ampliato: lobi oblongi, consimiles, patentissimi, plani, vel posticus (æstivatione intimus) primum concavus minus patens. Stamina 2, fauci inserta: filamenta filiformia, corollæ lobis æquilonga: antheræ biloculares, loculis parallelis contiguis muticis. Staminodia nulla. Stylus filiformis: stigma capitellatum vel emarginatum. Ovarium loculis biovulatis. Capsula ovata, acuminata, obcompressa, longe clavato-stipitata. Semina plana, scabrida. — Fruticuli Texano-Arizonici, ramosissimi, glabelli; ramulis gracilibus; foliis parvis angustis integerrimis, bracteis bracteolisque consimilibus; floribus sparsis; corolla roseo-purpurea.

C. *LINEARIFOLIA*. Pedalis, ericoideo-foliosa; foliis angustissime linearibus; floribus paniculato-racemosis; sepalis fere discretis bracteis foliisque similibus; corollæ lobis tubo duplo longioribus; filamentis puberulo-hirtellis; antheris sagittatis, loculis basi obtusissimis; stipite capsulæ æquilongo. — *Shaueria linearifolia*, Torr. Bot. Mex. Bound. 123. *Dianthera* sp. Benth. & Hook. Gen. ii. 1114. — S. W. Texas, C. Wright, Bigelow, Parry.

C. *ARIZONICA*. Humilis, diffusa; foliis oblongis lanceolatis (lin. 2-3 longis); floribus in ramulis filiformibus nudis sparsis sessilibus; bracteis subulatis calyce 5-fido brevioribus; bracteolis fere nullis; corollæ lobis tubo 3-plo longioribus, 3 angusto-oblongis, postico sursum latiore basi attenuato facie macula lutea; filamentis glabris; antheris oblongis; stipite capsula brevior. — Arizona, on rocks near Camp Grant, Dr. Palmer, coll. 1867.

These two little shrubs appear to form a well-marked genus, certainly different from *Dianthera* as well as from *Schaueria*. Notwith-

standing the *Wrightia* of Brown, by an allowable and fairly euphonious combination of baptismal and surname, I am able to dedicate this genus to *Mr. Charles Wright*, the first discoverer of one of the species, my esteemed associate in botanical pursuits for more than thirty years, and one of the most indefatigable of explorers. Although he has made important and well-known collections in various parts of the world, especially in Japan, and above all in Cuba, and although a large number of species bear his name as their discoverer, it is still most proper that, in the generic form, it should be connected with the flora of North America, with the region in which his botanical investigations began, and which he most assiduously and largely explored.

GATESIA, nov. gen. Tr. *Justiciearum*.

Calyx 5-partitus, subglumaceus; segmentis setaceo-subulatis, quinto minore. Corolla subhypocraterimorphis; tubo gracili, fauce parum ampliata; limbo alte 4-lobo; lobis fere similibus planis ovatis. Stamina 2, inclusa: antheræ loculi oblongi, mutici, conformes, contigui, uno demissiore obliquo. Staminodia nulla. Stigma capitellatum. Capsula et semina *Diantheræ*. Spicæ breves, floribus substrobilaceo-bracteatis *Tetramerii*, bracteolis majusculis herbaceis *Diclipteræ*.

G. LÆTE-VIRENS. — *Justicia læte-virens*, Buckley in Am. Jour. Sci. xlv. (1842), 176. *Rhytiglossa viridiflora*, Nees in DC. Prodr. xi. 346. "*Justicia viridiflora*," Buckley in herb. Hook., meant for *J. viridifolia*. *Dicliptera Halei*, Riddell, Cat. Fl. Ludov. 1852; Chapm. Fl. 305. — Northern Alabama and Southern Tennessee to Eastern Texas.

In memory of *Dr. Hezekiah Gates*, who almost fifty years ago made and distributed a considerable collection of Alabama plants, mostly from the vicinity of Mobile. Among them was *Petalostemon corymbosus*, upon which the late Professor Bertoloni of Bologna (mistaking it for a *Composita*!) founded his genus *Gatesia*. The present genus, I trust, is better founded, and will keep up the name in connection with an Alabamian plant.

3. *New Astragali*.

ASTRAGALUS DISPERMUS. *A. didymocarpo* affinis, annuus, pusillus; ramis a basi diffusis; floribus in capitulo subgloboso 6–10; calyce albo-villoso, dentibus setaceo-subulatis tubo suo campanulato æquilongis corollam cæruleam subæquantibus; vexillo alis carinaque parum longiore; legumine calycem haud superante ovato turgido fere membranaceo venis prominulis transversis subruguloso sutura dorsali intrusa

quasi didymo; locellis uniovulatis monospermis. — Wickenburg, Arizona, Dr. Palmer, 1876.

ASTRAGALUS ALLOCHROUS. Inter *Inflatos* perennes corolla ut videtur læte purpurea seu violacea insignis; floribus, etc., cæterum fere *A. Douglasii* et *macrodontis*; legumine vesicario sesquipollicari; foliolis oblongis ramisque adpresso-puberulis subcinereis. — Near Wickenburg, Arizona, Dr. E. Palmer, 1876. The flowers are 4 or 5 lines long, loosely spicate; the calyx-teeth subulate from a broad base and rather shorter than the tube; the legume minutely and sparsely pubescent, and not at all mottled. — Dr. Palmer collected an allied species the following year, on the northern border of Arizona, viz.: —

ASTRAGALUS SUBCINEREUS. *A. allochroo* et *A. Wardi* (etiam perenni?) affinis, undique molliter cinereo-pubescent; caulibus e caudice perenni diffusis ultraspithamæis foliosis; stipulis liberis parvis; petiolis brevibus; foliolis 19–21 linearibus oblongisque retusis (lin. 3–4 longis); pedunculis folio brevioribus; spica oblonga confertim multiflora; floribus patentibus (lin. 3 longis); dentibus calycis angusto-subulatis tubo campanulato paullo brevioribus; corolla ut videtur viridula apice purpurea, vexillo violaceo-striato; legumine tenuiter vesicario uniloculari globoso cum acumine parvo $\frac{3}{4}$ -pollicari puberulo purpureo-picto polyspermo, sutura ventrali modice introflexa. — Mokiak Pass in the northwestern part of Arizona, near the Utah boundary, Dr. E. Palmer, 1877.

ASTRAGALUS SCAPOSUS. Subcaulis, cæspitans, pube brevissima adpressa argenteo-incana; stipulis scariosis basi petioli adnatis; foliolis 7–11 obovato-oblongis (lin. 4–5 longis) utrinque incanis; pedunculis scapiformibus gracilibus (3–8-pollicaribus) cum spica oblonga crebriuscule 6–12-flora foliis duplo longioribus; calycis tubo oblongo-campanulato dentibus subulatis 2–3-plo longioribus; corolla “rubro-purpurea nunc albescente” (lin. 5 longa) ultra calycem vix dimidio exserta; vexillo alisque æquilongis obcordato-emarginatis carina recta obtusissima paullo longioribus; leguminibus adscendentibus parvulis (lin. 5 longis sesquilineam latis) calyce fere semi-inclisis rectis subtrigonocylindræis (sutura dorsali sulcata, ventrali subprominula) estipitatis canescentibus septo tenui bilocellatis; locellis 8–9-spermis. — Among rocks in dry creek-bottoms, in Mokiak Pass, near the northeastern corner of Arizona, Dr. E. Palmer, 1877. Not much like any other of our species, except that the foliage resembles that of *A. Missouriensis*.

ASTRAGALUS AMPHIOXYS. *A. Shortiano*, Nutt. (*A. cyaneo*, Gray, Pl. Fendl.) et *A. Missouriensis* sat similis; foliolis (lin. 3–6 longis) sæpius oblongis acutis; legumine tenuiter coriaceo aut anguste aut obovato-oblongo obcompresso basi apiceque attenuato et compresso nunc

leviter nunc maxime arcuato. — *A. Shortianus*, var.? *minor*, Gray, Astrag. Rev. in Proc. Am. Acad. vi. 211, magna pro parte. *A. cyaneus*, Watson in Am. Naturalist, ix. 270, quoad coll. Parry, no. 46, 49. — Southern Utah and New Mexico and Northern Arizona, Thurber, Parry, Palmer, &c. Fine specimens with better fruit than before, collected in 1877 by Dr. Palmer on the borders of Utah and Arizona, have now called proper attention to this species, which as to the foliage and flowers might be wholly mistaken for *A. Missouriensis*, while through its larger and curved legume it has been confounded with *A. Shortianus*. Mr. Watson, who noted the characters upon immature fruit, took this species to be the *A. cyaneus* of Pl. Fendl., &c.; but that, as to all the original specimens is truly *A. Shortianus*, and so this must have a new name. However it be as to the foliage and flowers, these three species are well distinguished by their fruit; *A. Missouriensis* and *A. Shortianus* by the cartilaginous (at first somewhat fleshy) texture and very abrupt obtuse or rounded base of the legume, which in the former is short, elliptical, and straight; in the latter larger and longer (one to two inches long) and curved. A marked variety of it (var. *brachylobus*, recently collected by Dr. Palmer in Arizona) has a shorter pod with an obtuse apex. *A. amphioxys*, as its name denotes, has the legume acute at both ends, the base so much narrowed that it often seems to be stipitate in the calyx; the texture is much thinner, the fore-and-aft compression greater, the arcuation moderate in the shorter pods, but strong in the longer ones.

ASTRAGALUS MOKIACENSIS. *A. iodantho* proximus, elatior; stipulis herbaceis; calycis dentibus tubo dimidio brevioribus; legumine oblongo rectiusculo vel parum curvato turgido ($\frac{1}{2}$ – $\frac{3}{4}$ -pollicari) sectione transversa ovali ad suturas levissime sulcato haud carinato. — Rocky ravines, Mokiak Pass, on the borders of Utah and N. W. Arizona, Dr. Palmer, 1877. The collector notes that the corolla is “red and white;” in the dried specimens the color is deep violet.

ASTRAGALUS URSINUS. Habitu præcedentis et *A. iodanthi*; caulibus magis flexuosis; floribus minoribus (parum semipollicaribus); calycis dentibus triangulatis tubo campanulato 3–4-plo brevioribus; spica oblonga densiflora; leguminibus arrectis parvulis (semipollicaribus) oblongis sursum parum attenuatis acutis leviter arcuatis coriaceis bilocellatis, sectione transversa circulari, suturis nec sulcato-intrasis nec carinato-prominulis. — Bear Valley in south-central part of Utah, Dr. Palmer, 1877.

ASTRAGALUS TRIQUETRUS. Humilis, e radice annua diffusus, pubes adpressa cinereus; stipulis parvulis scariosis liberis; foliis 7–9 ovali-

bus oblongisve (lin. 3-4 longis); pedunculis folio multo brevioribus laxe paucifloris; floribus patentibus mox deflexis parvis (lin. 2 longis); calycis dentibus subulatis tubo brevioribus; legumine membranaceo uniloculari glabello estipitato (circ. lin. 7 longo et 4 lato) circumscriptione ovato-oblongo et arcuato sed triquetro, angulis acutis ventralibus et lateralibus, dorso lato obcompresso-impresso, suturis tenuissimis haud intrusis; seminibus 6. — Southeastern borders of Nevada, at the confluence of Muddy River with the Virgin, Dr. Palmer, 1877; sparingly collected. Habit somewhat of *A. Geyeri*, and the legume equally thin-walled; but the triquetrous form (which is restored by soaking), with the broad back somewhat impressed with a re-entering angle, is peculiar.

ASTRAGALUS SABULONUM. *A. trifloro* et *Geyeri* subsimilis, cinereo-pubescent; caulibus (spithamæis) e radice annua laxè diffusis; stipulis liberis; foliolis 9-13 oblongis (semipollicaribus); pedunculis gracilibus folio sæpe brevioribus laxè 3-5-floris; floribus lin. 3 longis; calycis subvillosi dentibus promisse subulatis tubo brevi longioribus corollam purpuream seu violaceam æquantibus; vexillo striato; legumine chartaceo subinflato oblongo-ovato subincurvo estipitato villosulo (semipollicari) prorsus uniloculari, suturis nec prominulis nec intrusis. — Southeastern border of Nevada, near the confluence of Muddy River with the Rio Virgin, on sandy ridges, Dr. Palmer, 1877.

ASTRAGALUS CONFERTIFLORUS. (*A. flavus*, var. *candicans*, Gray, Proc. Am. Acad. xii. 54.) Humilis, pube minuta adpressa canescens, e caudice crasso confertim multicaulis; stipulis scariosis folium adversus connatis; foliolis 11-13 angusto-linearibus (lin. 8-12 longis lineam latis); pedunculis strictis caules foliaque superantibus (3-4-pollicaribus); spica stricta densa multiflora (2-3-pollicari); calyce adpresso-pubescente, dentibus tubo campanulato parum brevioribus; corolla "pallide lilacina," carina apice violacea; legumine (vix semipollicari) ovali-oblongo sericeo-canescente calyce $\frac{1}{3}$ -incluso modice obcompresso uniloculari, sutura dorsali intus vix tumida, ventrali extus saliente crassa. — Utah, near Richfield, L. F. Ward, in fruit; near St. George, Dr. Palmer, finely in flower; and the corolla proves to be not at all yellow. Although nearly related to *A. flavus*, it must be different. The pubescence, especially of the calyx and inflorescence, is much finer and closer; the spike more strict and dense; flowers narrower; the legume rather more exerted from the calyx, and its dorsal suture less tumid within. But the fruit of the two is very much alike: in both the retuse base is connected with the receptacle by an extremely short stipe, not longer than thick.

ASTRAGALUS TETRAPTERUS. Subpedalis e radice perenni, fere glaber; caulibus rigidis tenuiter striatis foliosis; stipulis subulatis fere liberis; foliolis 15–21 angusto-linearibus (lin. 6–10 longis parum lineam latis); pedunculis folio adæquantibus; floribus 5–9 subcapitato-congestis erectis; calycis dentibus setaceo-subulatis tubo oblongo-campanulato plus dimidio brevioribus; corolla alba angusta $\frac{3}{4}$ -pollicari; legumine haud stipitato uniloculari coriaceo-oblongo (pollicari et sesquipollicari) arcuato-incurvo eximie tetraquetro-alato polyspermo, suturis haud intrusis. — Southern Utah, Mrs. Thompson and Capt. Bishop, in flower (1871–73), and now (1877) found by Dr. Palmer in fruit, 25 miles north of St. George. Remarkable for the fruit, by which it may be associated with *A. pterocarpus*, Watson, which has still more developed wings on the middle of the valves; in the present species both sutures are equally alate-carinate.

ASTRAGALUS HUMISTRATUS, Gray, var. This, from Mokiak Pass, and the same as Palmer's no. 103 of the 1876 collection, is also the same as Parry's no. 53, of 1874, named *A. Sonoræ*. But it has the fresh or freshened legume obcompressed as well as arcuate-incurved and with considerable dorsal intrusion, at least below the middle. The original specimen of *A. Sonoræ* is the only one in which the character assigned to the species holds good, and its pods are immature. It seems probable that the latter species may be suppressed, and that the former may vary remarkably in the legume and also in pubescence and length of calyx-teeth.

ASTRAGALUS PROCERUS. *Scytocarp*i, subglaber; caulibus robustis 2–3-pedalibus; stipulis parvis triangulatis liberis; foliolis ad 17 ovalibus (lin. 6–18 longis); floribus in spicam-oblongam confertis numerosis patentibus mox deflexis; calycis dentibus subulato-deltoides tubo campanulato 2–3-plo brevioribus; corolla ochroleuca (lin. 7 longis); legumine crasso-coriaceo vesicario turgide ovali pollicari obtusissimo cum mucrone basi subito breviter substipiformi-contracto, suturis nec incrassatis nec sulcatis. — Near St. Thomas, S. E. Nevada, at the confluence of Muddy River with the Virgen, among underbrush, Dr. Palmer, 1877. The legumes and the flowers resemble those of *A. Pattersonianus*; but the former are much blunter, and the calyx-teeth are very much broader and shorter.

ASTRAGALUS PREUSSII, Gray in Proc. Am. Acad. vi. 222: var. **LAXIFLORUS.** Floribus minoribus ($\frac{3}{4}$ -pollicaribus) in spica subsparis; calycis tubo oblongo-campanulato (nec cylindræo) dentibus vix triplo longiore; corolla in sicco violacea; legumine minus stipitato. — Beaver-dam, on the Rio Virgen, northwest corner of Arizona, Dr. Palmer

(1877), in the district where the original and single specimen of *A. Preussii* was collected by Fremont. The proper stipe of the legume is very short, or even almost wanting, but the base of the pod is abruptly contracted.

ASTRAGALUS ARTIPES. *Inflati*, glaber, e caudice perenni subspithamæus; stipulis basi petioli (nunc parce pilosuli) adnatis; foliolis 11–17 oblongis seu ovalibus (lin. 4 longis); pedunculis folio brevioribus confertim paucifloris; pedicellis suberectis calyce brevioribus; dentibus calycis elongato-subulatis tubo campanulato subæquilongis; corolla albo-purpurea; legumine tenuiter vesicario ovato purpureo-picto (pollicari) prorsus uniloculari basi parum attenuata cum stipite gracili calycem superante articulado! — Mokiak Pass, northwest corner of Arizona, in ravines, Dr. E. Palmer, 1877. A single specimen collected of this well-marked species, which is most allied to *A. ampullarius* of Watson, from the same region. The distinct articulation of the pod with its stipe is peculiar, but it occurs in *A. oophorus*, Watson, and there is some indication of such a joint in *A. leucophyllus*. The flowers are said to be creamy white, tipped with light purple. In the specimen the purple tinge predominates.

ASTRAGALUS LANCEARIUS. *Homalobi*, e caudice perenni ultrapedalis; caulibus junciformibus; stipulis parvis liberis; foliis cinereo-puberulis; petiolis nunc aphyllis nunc foliolis 2–4-jugis linearibus seu filiformibus sparsis instructis; pedunculis elongatis racemoso-plurifloris; calycis dentibus tubo campanulato dimidio brevioribus; corolla (lin. 4 longis) ut videtur alba, carina apice purpurascente; leguminibus refractis lato-lanceolatis plano-compressis glaberrimis haud stipitatis (lin. 9–15 longis 3 latis), suturis nec incrassatis nec intrusis, valvis chartaceis; seminibus 5–12. — Near Beaverdam on the Rio Virgen, northwest corner of Arizona, Dr. Palmer, 1877. Flowers and legumes about the size of those of *A. filipes*, but the latter strictly sessile in the calyx and more acute.

ASTRAGALUS CUSICKII. *Inflati*, fere glaber; caulibus (ultrapetalibus) gracilibus sparsifoliatis subflexuosis; stipulis parvulis liberis; petiolis cum rhachi junciformibus; foliolis dissitis parvis (lin. 2–6 longis, majoribus angusto-linearibus, minoribus oblongis); pedunculis elongatis laxifloris; pedicellis brevibus mox recurvis; calyce late campanulato, dentibus brevissimis fere deltoideis; corolla ut videtur alba (semipollicari); leguminibus pendulis tenuiter vesicariis (ultrapollicaribus) prorsus unilocularibus obovatis acuminulatis basi in stipitem e calyce parum exsertum attenuatis. — Union Co., in the western part of Oregon, Wm. C. Cusick, comm. by G. O. Woolson. Apparently a

tall species (base of stem not seen), with somewhat the habit of *A. pictus* and of several of the *Homalobi*; the legume resembling that of *A. Whitneyi*, but of neither that nor of this species have we fully grown pods.

4. *Miscellanæ.*

BOYKINIA ROTUNDIFOLIA, Parry in litt. Bipedalis, pilis longis arachnoideis subdeciduis et brevioribus subglanduliferis viscosis pubescens; caule ad apicem subæqualiter folioso; foliis rotundatis ambitu crenato-incisis (vix lobatis) lobulis pauci-dentatis, radicalibus caulinisque cordatis haud stipulatis, summis ovalibus grosse dentatis; pedunculis plerisque axillaribus cymam sæpius biradiatam secundifloram gerentibus; calyce hirto campanulato, lobis latis tubo brevioribus petala (æstivatione quincunciali) subæquantibus; antheris oblongis; seminibus ovali-oblongis. — San Bernardino Co., California, Parry & Lemmon, coll. 1876, no. 113.

GALIUM (RELBUNIUM) MARGARICOCIMUM. E radice perenni dura diffusum, herbaceum, laxè ramosum, subglabrum; caulibus inermibus; foliis quaternis summisve tantum binis (nunc 2 intermediis minoribus) angusto-oblongis vel lato-linearibus aveniis (lin. 3–6 longis), costa nuda, marginibus tenuiter aculeolato-hirtellis; pedicellis solitariis vel subternis folia ultima 1–4-na sæpius æquantibus; corolla sordida? (fere lineam lata); fructu insigniter baccato albo (lin. 2 et ultra lato). — Dry hillsides, Calaveras to Mariposa Co., California, on the walls of the Yosemite Valley, &c. In the Botany of California, i. 283, this is mixed with *G. Nuttallii*, but no station which pertains to it is cited. It was collected during the past summer by Sir J. D. Hooker and myself, in full fruit; when the very juicy berries are pearly white and conspicuous. The color of the fruit of *G. Nuttallii* is unknown. But that is a more upright or climbing species, with broader and shorter or smaller leaves, which have conspicuously aculeolate margins, as have the angles of the stem more or less. And it belongs to the coast-region, from the Bay of San Francisco southward.

These, along with the allied North American species, belong to the section *Relbunium* of Torr. & Gray, Fl. N. Am. ii. 21, characterized by the baccate fruit from a tetramerous flower, but not to the genus *Relbunium* of Bentham and Hooker, if the character depends on an involucre unlike the foliage, and subtending a sessile or subsessile flower, as in a few S. American species. *G. microphyllum*, Gray, has the flower thus involucre, but the involucre is similar to the proper foliage.

ASTER (MACHÆRANTHERA) PATTERSONI. E radice bienni seu vix perenni multicaulis, subspithamæus; foliis spathulatis integerrimis (radicalibus nunc apicem rotundatum versus leviter pauci-dentatis) læte viridibus piloso-ciliatis demum glabratiss; caulibus superne glanduloso-pubescentibus 2-4-foliatis 1-4-cephalis; involucri hemisphærici squamis 3-4-serialibus fere æquilongis lanceolatis acuminatis ultra medium herbaceis et squarroso-patentibus pube viscosa sæpius hirtella crebre indutis; ligulis numerosis semipollicaribus læte cæruleo-violaceis; acheniis ut videtur linearibus glabriusculis. — Colorado Rocky Mountains, at about 11,000 feet and higher along the branch of Clear Creek flowing from Torrey and Gray's Peaks, Dr. Parry, 1872; H. N. Patterson (in honor of whom the species is named), 1876; J. D. Hooker and A. Gray, 1877. A handsome and large-flowered dwarf species, with heads larger than those of *A. Coloradoensis*, and much larger than those of the related *A. Kingii*, of D. C. Eaton (which has been collected in a larger form farther south in the Wahsatch by Dr. Parry): including the rays, it has a diameter fully an inch and a half. The stems in Mr. Patterson's specimens are fully a span high. — Var.? **HALLII**, gracilior, magis ramosus; foliis ramealibus linearibus; capitulis minoribus; involucri minus pubentis squamis fere subulatis. This is mixed with *A. (Machæranthera) tanacetifolius* in the distribution of Hall and Harbour's Colorado Collection, no. 285, and indeed the heads of this form closely resemble those of that species. We found a little of it on La Veta or Sangre de Cristo Pass, S. Colorado.

ERIGERON MISER. Multiceps e caudice lignescente, subspithamæum, crebre villosopubescent, cinereum; caulibus ad apicem usque foliosis mono-oligocephalis; foliis subspathulatis integerrimis ($\frac{1}{4}$ - $\frac{1}{2}$ -pollicaribus); pedunculis brevibus; capitulis parvis (lin. 3 longis); involucri squamis subulatis inæqualibus; ligulis nullis; acheniis hirsutis (bicostatis); pappo exteriore setuloso sat manifesto. — Sierra Nevada, California, in crevices of rocks at Donner Lake, E. L. Greene, October, 1874; and above, on or near the summit of Mt. Stanford, J. G. Lemmon, A. Gray, and J. D. Hooker, September, 1877.

LAPHAMIA PALMERI. *Monothrix*, sed facie capitulisque homogamis *L. rupestri* similior, ultraspithamæa e basi lignosa crassa ramosa, cinereo-pubescent; foliis submembranaceis deltoideo-subcordatis vel rotundatis grosse paucidentatis incisive petiolatis venosis; capitulis brevipedunculatis subcymosis multifloris; involucri squamis linearibus; seta unica pappi achenio scabro hirtello æquilonga corolla paullo brevior. — At Beaverdam, in the northwest corner of Arizona, growing out of crevices of rock in cañons, in pendulous clumps, Dr. E. Palmer.

"Flowers creamy white," according to the discoverer's notes, but sulphur-yellow in the dried specimens.

THELESERMA SUBNUDUM, Gray, Proc. Am. Acad. x. 72. Specimens collected in 1877, by Dr. Palmer, show that it commonly has ray-flowers, even of a very large size, that the akenes sometimes become granular-tuberculate, and that the pappus may develop in the manner of *T. subsimplicifolium*. The species appears to hold distinct, but it must have a new character and include *T. simplicifolium*, var. *sca-posum*.

ACTINELLA BRANDEGEEI, T. C. Porter. Ex affini *A. grandiflora* insigniter differt tomento minus lanato parciore; foliis simpliciter 3-5-lobatis paucisve integris glabratis; capitulis multo minoribus ebracteatis; involucri squamis lato-lanceolatis; ligulis 12-16 (tantum semipollicaribus); acheniis subturbinatis; pappi paleis firmioribus ovato-lanceolatis parum acuminatis corolla disci dimidio brevioribus. — *A. grandiflora*, var. *glabrata*, T. C. Porter, Fl. Colorado, 76. — Sangre de Cristo range of mountains and on Sierra Blanca, S. Colorado, at 11,500 feet, &c., in the alpine region, Parry (1867, undeveloped), Brandegee, Gray and Hooker. It was only in deference to my erroneous opinion that this species was omitted from publication, under the above name in 1874, in Porter and Coulter's Flora of Colorado. The species is abundantly different from *A. grandiflora*, and wholly replaces it in the alpine districts of the southern part of Colorado.

ACTINELLA BIENNIS. *A. Richardsonii* proxima, multo major; radice bienni; caule 1-2½-pedali; pedunculis monocephalis subpaniculatis; ligulis in maximis pollicem longis; disco maturo semipollicem alto; receptaculo hemisphærico et pappo *A. Richardsonii*. — S. Utah and Arizona, Mokiak Pass south of St. George, Palmer (no. 260 of coll. 1877); Richfield, Utah, L. F. Ward in Powell's Exped. no. 175, &c. Probably *A. Richardsonii*, var. *canescens*, Eaton in Watson, Bot. King; but it is uncertain whether that has not the multicapital truly perennial stock of *A. Richardsonii*. *A. chrysanthemoides* and *A. odorata* (the latter found along our southern frontiers) are annual species, with similar foliage, and *A. anthemoides*, the original *Hymenoxys* of Cassini (if rightly identified by Hooker and Arnott, as is wholly probable) is a rayless Bonarian species much like *A. odorata* and with a similar acutely conical receptacle.*

* *Hymenoxys* of Cassini, and also of Bentham and Hooker, would therefore merge in *Actinella*. The only character in the diagnosis to separate them is that the receptaculum is said to be sometimes flat or convex in the former. But although Kunth and Cassini describe *H. chrysanthemoides* as having "recep-

ARNICA VISCOSA. Subpedalis, undique viscoso-pubescent; caulibus ad apicem usque æqualiter foliosis oligocephalis; foliis parvis (majoribus parum uncialibus) ovato-oblongis integerrimis arcte sessilibus; pedunculis brevibus; involucri disco subdimidio brevior; ligulis nullis; corollis disci ochroleucis; acheniis glabriusculis. — On Mount Shasta at about 8,000 feet, Gray & Hooker. Heads rather few-flowered, only two-thirds of an inch long. A most distinct species, seemingly not before collected, growing near the upper border of the wooded belt.

ERITRICHUM HOLOPTERUM, Gray, Proc. Am. Acad. xii. 81, var. **SUBMOLLE.** Minus; spicis brevibus densifloris nudis pedunculatis cum ramis floridis parum hispidis; calyce (haud ultra lineam longo) sericeo-pubescente imberbi, lobis oblongis obtusis; nuculis angustissime alato-marginatis. — St. George, S. Utah, Dr. Palmer. The species was characterized from specimens not yet well-developed, although bearing a little nearly mature fruit. The present specimens appear to belong to it, but are smaller and lower, with better developed and ebracteate inflorescence, and calyx almost or quite destitute of setose bristles. The lower part of the plant has the same short bristles of the species, with broad papilliform base.

taculum subplanum," it is hemispherical in age, and it is high-conical (as remarked above) in the more typical species.

As to the original *Actinella* of Persoon (*Actinea heterophylla*, Juss.), which seems out of place among the globular- and discoid-headed *Cephalophoræ*, it is intermediate in character between *Helenium* and *Actinella* of Nuttall, differing from the latter only in the looser, thinner, and smaller scales of the involucre. If, notwithstanding this, it were referred to *Actinella*, this genus would be restored to Persoon, or, under the form of *Actinea*, to Jussieu. But probably Persoon's plant should be referred to *Helenium*.